CLAIMS:

1. A method for producing single crystal silicon by which the single crystal silicon is produced by dipping a seed crystal in a melt and pulling the seed crystal up along an axial direction thereof, wherein

the seed crystal is pulled up in a state in which a <110> crystal orientation is inclined with respect to the axial direction of the seed crystal.

2. A method for producing single crystal silicon by which the single crystal silicon is produced by dipping a seed crystal in a melt and pulling the seed crystal up along an axial direction thereof, comprising:

a step of preparing the seed crystal in which a <110> crystal orientation is inclined at a predetermined angle θ with respect to the axial direction;

a dislocation network elimination step of gradually reducing a diameter of the single crystal silicon to d1 after the seed crystal has been brought into contact with the melt; and

a slip dislocation elimination step of further growing the single crystal silicon by a length of at least $d1/\tan\theta$, while maintaining the diameter thereof at almost d1.

3. The method for producing single crystal silicon according to claim 1, wherein

the direction of inclining the <110> crystal orientation with respect to the axial direction of the seed crystal is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with the <110> crystal orientation, as a rotation axis.

4. The method for producing single crystal silicon according to claim 2, wherein

the direction of inclining the <110> crystal orientation with respect to the axial direction of the seed crystal is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with this <110> crystal orientation, as a rotation axis.

5. A method for producing single crystal silicon wafer by which the single crystal silicon wafer is produced by dipping a seed crystal in a melt, growing the seed crystal into a single crystal silicon ingot by pulling it along an axial direction thereof, and slicing the single crystal silicon ingot, comprising:

a pulling step of pulling and growing the seed crystal into a single crystal silicon ingot in a state in which a <110> crystal orientation is inclined at a predetermined angle θ with respect to the axial direction of the seed crystal; and

a slicing step of slicing the single crystal silicon ingot in a direction perpendicular or almost perpendicular to the <110> crystal orientation to take out the single crystal silicon wafer.

6. A method for producing single crystal silicon wafer by which the single crystal silicon wafer is produced by dipping a seed crystal in a melt, growing the seed crystal into a single crystal silicon ingot by pulling it along an axial direction thereof, and slicing the single crystal silicon ingot, comprising:

a step of preparing the seed crystal in which a <110> crystal orientation is inclined at a predetermined angle θ with respect to the axial direction;

a dislocation network elimination step of gradually reducing a diameter of the single crystal silicon to d1 after the seed crystal has been brought into contact with the melt;

a slip dislocation elimination step of further growing the single crystal silicon by a length of at least d1/tan θ, while maintaining the diameter thereof at almost d1;

an ingot producing step of pulling the seed crystal to produce the single crystal silicon ingot; and

a slicing step of slicing the single crystal silicon ingot in a direction perpendicular or almost perpendicular to the <110> crystal orientation to take out the single crystal silicon wafer.

7. The method for producing single crystal silicon wafer according to claim 5, wherein the direction of inclining the <110> crystal orientation at a predetermined angle θ with respect to the axial direction of the seed crystal is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with the <110> crystal orientation, as a rotation axis.

8. The method for producing single crystal silicon wafer according to claim 6, wherein the direction of inclining the <110> crystal orientation at a predetermined angle θ with respect to the axial direction of the seed crystal is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with the <110> crystal orientation, as a rotation axis.

9. The method for producing single crystal silicon wafer according to claim 5, wherein the predetermined angle θ at which the <110> crystal orientation is inclined with respect to the axial direction of the seed crystal is within a range of $0.6° \leq \theta \leq 10°$.

10. The method for producing single crystal silicon wafer according to claim 6, wherein

the predetermined angle θ at which the <110> crystal orientation is inclined with respect to the axial direction of the seed crystal is within a range of $0.6° \leq \theta \leq 10°$.

11. A seed crystal for producing single crystal silicon, which is used for producing the single crystal silicon by a CZ method, wherein

a <110> crystal orientation is inclined with respect to an axial direction.

12. The seed crystal for producing single crystal silicon according to claim 11, wherein

the direction of inclining the <110> crystal orientation with respect to the axial direction of the seed crystal is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with the <110> crystal orientation, as a rotation axis.

13. A single crystal silicon ingot produced by a CZ method, wherein

a <110> crystal orientation is inclined at a predetermined angle θ with respect to an axial direction.

14. The single crystal silicon ingot according to claim 13, wherein

the direction of inclining the <110> crystal orientation at a predetermined angle θ with respect to the axial direction of the single crystal silicon ingot is a direction of rotation about another <110> crystal orientation, which is in a perpendicular positional relationship with the <110> crystal orientation, as a rotation axis.

15. The single crystal silicon ingot according to claim 13, wherein

the predetermined angle θ at which the <110> crystal orientation is inclined with respect to the axial direction of the single crystal silicon ingot is within a range of $0.6° \leq \theta \leq 10°$.

16. A single crystal silicon wafer taken out by slicing a single crystal silicon ingot produced by a CZ method,

the single crystal silicon wafer being taken out by slicing the single crystal silicon ingot, in which a <110> crystal orientation is inclined at a predetermined angle θ with respect to an axial direction, in a direction perpendicular or almost perpendicular to the <110> crystal orientation.